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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/777,061      | 02/13/2004  | Youji Kawahara       | Q78664              | 5635             |

23373 7590 10/30/2006

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| EXAMINER |
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DUONG, THO V

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

3744

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                                 |  |
|------------------------------|-------------------------------|---------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/777,061 | Applicant(s)<br>KAWAHARA ET AL. |  |
|                              | Examiner<br>Tho v. Duong      | Art Unit<br>3744                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/5/06 has been entered.

#### ***Specification***

The disclosure is objected to because of the following informalities: on page 13, at line 13, "cross-section a by" appears to be a typographical error of "cross-section by".

Appropriate correction is required.

#### ***Claim Objections***

Claims 15 and 16 are objected to because of the following informalities: it appears to be a typographical error that the word "at" is missed out at line 2 before "the portion" and "the portions" of each claim. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 15-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

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described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The combination of subject matters that "the direct reflux flow passage is formed on the inner surface of the container and the porous body sheet is mounted thereon to close an opening of the direct reflux passage" and the subject matter of a dent or dents created in the liquid surface corresponding to the reflux flow passage is not supported by the original disclosure. It appears in the figure 3 of the invention that the dent is formed corresponds to the reflux flow passage, which is an open type reflux flow passage.

Claims 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed subject matter of "a dent (dents) is/are created in the liquid surface of the condensable liquid phase working fluid the portion corresponding to the reflux flow passage, and a vapor flow passage is secured therein" is not described in the specification in such a way to enable one skill in the art to make or use the invention. In this instant case, it is not known or understood how a dent can be formed in a liquid surface of the liquid (9) and a vapor flow passage secured in the dent. Applicant has not disclosed any structure or any connection that the how the dents can be made or used. It would be impossible for having a dent in a liquid surface and a vapor flow passage secured to it without any support structure.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 13, the subject matter is identical to the claimed subject matter of claim 2. The only different between them is the order of the wording, which does not differentiate the content of the subject matter. Structurally, "the direct reflux flow passage includes a plurality of flow paths extending from the evaporating part to a plurality of portions of the side of the condensing part" is the same as "the direct reflux flow passage includes a plurality of flow paths extending from the plurality of portions of the condensing part side to the evaporating part".

Claim 14 recites the limitation "between the plurality of flow paths" in line 1. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2,8-10,12-14 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Peck (US 4,021,816). Peck discloses (figures 3-4 and 9) a heat pipe having a container is constructed to have flat thin shaped section comprising a top face (11) and a bottom face (10); a porous body sheet (17) is arranged on the bottom surface of the container; wherein a plurality of direct reflux flow passages (16) have a flow cross sectional area greater than that of

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cavity formed in a wick, the direct reflux flow passages are formed from the condensing part to the evaporating part in the container; the direct reflux flow passages are formed on the inner face of the container and the porous body sheet is mounted thereon to close openings of the direct flow passages. Regarding claim 14, the width of the evaporation part is defined as the span of plurality of reflux in the width direction, this span is clearly wider in the evaporation part than in the condensation part and a clearance between the flow paths on the evaporating part is wider than on the condensing part.

Claims 1-2,8-10,12-13 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Bilinski et al. (US 3,811,493). Bilinski discloses (figures 1-4) a heat pipe having a container is constructed to have flat thin shaped section comprising a top face (20) and a bottom face (18); a porous body sheet (26) is arranged on the bottom surface of the container; wherein a plurality of direct reflux flow passages (40) have a flow cross sectional area greater than that of cavity formed in a wick, the direct reflux flow passages are formed from the condensing part to the evaporating part in the container; the direct reflux flow passages are formed on the inner face of the container and the porous body sheet is mounted thereon to close openings of the direct flow passages.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peck in view of Eastman (US 4,196,504). Peck substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the wick sheet is composed of a copper porous sintered wick. Eastman discloses (figure 7, column 2, lines 4-9) that wick (18,80) can be made of a porous sintered material such as copper for a purpose of providing a good heat flow path to the heat pipe because of the excellent thermal conductivity of the metal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Eastman's teaching in Peck's device for a purpose of providing a good heat flow path to the heat pipe because of the excellent thermal conductivity of the metal.

Claims 3-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peck in view of Wang et al (US 6,210,042). Peck substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the direct reflux flow passage includes a concave slit formed on the surface of the porous body sheet disposed opposite to a concave slit formed on the inner surface of the container. Wang discloses (figures 3,4 and column 5, lines 1-3) that the direct reflux flow passage (8) in a heat pipe comes in different shapes and configurations such as the combination of two thin concave slits forming a circular flow passage for a purpose of providing a superior strength of the grooved structure. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Wang's teaching in Peck's device for a purpose of providing a superior strength of the grooved structure.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bilinski in view of Eastman (US 4,196,504). Bilinski substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the wick sheet is composed of a copper porous

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sintered wick. Eastman discloses (figure 7, column 2, lines 4-9) that wick (18,80) can be made of a porous sintered material such as copper for a purpose of providing a good heat flow path to the heat pipe because of the excellent thermal conductivity of the metal. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Eastman's teaching in Bilinski's device for a purpose of providing a good heat flow path to the heat pipe because of the excellent thermal conductivity of the metal.

Claims 3-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bilinski in view of Wang et al (US 6,210,042). Bilinski substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the direct reflux flow passage includes a concave slit formed on the surface of the porous body sheet disposed opposite to a concave slit formed on the inner surface of the container. Wang discloses (figures 3,4 and column5, lines 1-3) that the direct reflux flow passage (8) in a heat pipe comes in different shapes and configurations such as the combination of two thin concave slits forming a circular flow passage for a purpose of providing a superior strength of the grooved structure. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Wang's teaching in Bilinski's device for a purpose of providing a superior strength of the grooved structure.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Krempl (US 4,169,387) discloses a heat pipe with grooved wick.

Seidenberg et al. (US 4,883,116) discloses a ceramic heat pipe wick.

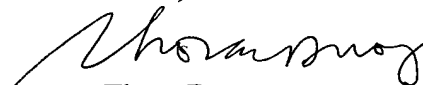


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tho v Duong  
Primary Examiner  
Art Unit 3744



TD

October 24, 2006